

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 October 2005 (13.10.2005)

PCT

(10) International Publication Number
WO 2005/095061 A1

(51) International Patent Classification?: **B25B 23/14**

(21) International Application Number:
PCT/SE2005/000470

(22) International Filing Date: 31 March 2005 (31.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0400867-8 1 April 2004 (01.04.2004) SE

(71) Applicant (for all designated States except US): **ATLAS
COPCO TOOLS AB** [SE/SE]; S-105 23 Stockholm (SE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **FRIBERG, John,
Robert, Christian** [SE/SE]; Fyrspannsv. 8, S-131 48
Nacka (SE).

(74) Agent: **PANTZAR, Tord**; Atlas Copco Tools AB, S-105
23 Stockholm (SE).

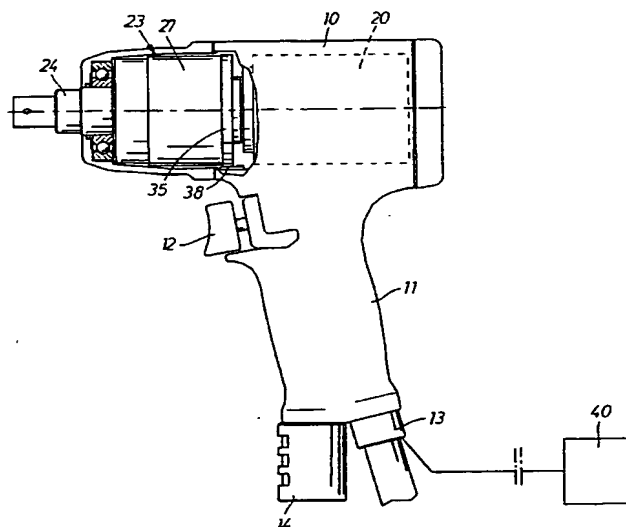
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR DETERMINING THE ANGULAR MOVEMENT OF THE OUTPUT SHAFT OF AN IMPULSE NUT RUNNER AT TIGHTENING A SCREW JOINT



(57) Abstract: A method for determining the angular displacement of the output shaft (ϕ_o) of an impulse nut runner at tightening a screw joint to a predetermined final torque level (T_f) by means of an impulse nut runner having a motor driven impulse unit (23) with an inertia drive member (27), an output shaft (24) to be coupled to the screw joint to be tightened and an angle sensing device (35, 38) associated with the drive member (27) and arranged to deliver signals in response to the rotational movement of the drive member (27), wherein the total angular displacement of the output shaft (24) in relation to a threshold torque level (T_1) is calculated as a difference between the total angular displacement ($\phi_{D_{tot}}$) of the drive member (27) as a result of a total number of delivered impulses (N_{tot}) and the angle of the total number of full revolutions minus one full revolution [$(N_{tot} - 1) \cdot 360$].